

valFORTH

T.M.

valDOS I&II

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3801 E. 34TH STREET
TUCSON, ARIZONA 85713

PRODUCT DESCRIPTION

This two disk package is being made available in response for specific requests for an interface between valFORTH and the standard Atari Disk Operating System (DOS) format. With this package, FORTH screens need never be used again. The package is composed of three basic subpackages:

A complete set of system level disk input/output operations is provided. More specifically, files can be created, opened, closed, read/written on a byte/block basis, end-filed, rewound, eof, spaced through in either direction, locked, unlocked, killed, and renamed. Other system commands which aid in filename conversion, and directory scanning are also supplied. These are for use in user written programs.

A complete set of file manipulation commands which includes CLOSE, COPY, DIR, DISKCOPYn, ENDFIL, EOF, ENTER, FDUMP, FILE-IT, LOAD, FMOVE, FORMAT, FSPACE, KILL, NAMEDISK, OPEN, OPEN?, PRINT, READ, RENAME, REWIND, SETUNIT, UNLOCK, and WRITE. The PRINT command sends a specified file to the current output device. The FDUMP command performs a hex/ASCII dump of a specified file. Most of these commands accept wild-card names and multiple arguments for ease in program development.

Finally, an expanded file editor based on the already powerful editor described in the General/Utilities package is supplied. The following enhancements are included: true forward/backward scrolls, global searches, splices, tab setting/resetting, command repeat mode, immediate file insertion, and a useful subcommand mode. This is in addition to all the features found in the valFORTH Video Editor 1.1.

This package is designed so that random access can easily be added sometime in the future.

Requires valFORTH 1.1

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DISPLAY FORMATTER

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PRODUCT DESCRIPTION

The Display Formatter gives the programmer virtually instant access to the Antic processor in the Atari 400/800. Essentially, this package is a very smart assembler for Antic, and takes care of all housekeeping chores associated with 4K memory boundaries, display memory allocation, programming Antics for display list interrupts, horizontal and vertical scrolling, wait-vertical blank, and so on. Also allows dynamic reformatting of display lists during application execution if desired, or creating one display list while display via a second one. The documentation contains tabular information about different Antic modes consolidated from various sources and step-by-step display list construction examples.

This package is one that probably should have been provided with the machine itself.

30 pages of documentation. Requires valFORTH 1.1

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PLAYER-MISSILE GRAPHICS,
CHARACTER EDITOR,
& SOUND EDITOR

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PRODUCT DESCRIPTION

This package addresses three of the many special capabilities of Atari 400/800.

The Player-Missile Graphics package essentially writes the book on how to create and manipulate PM's from high-level code. The package itself is approximately 75% machine code. Practically any routine that has anything to do with the speed of operation is machine-coded. ALL P/M options are supported, and a uniquely useful automatic bounding function is included in the routines to confine the PM's within rectangular areas with no additional runtime overhead, should the user so desire. This package includes:

commands to create, move, color, multicolor, bound, and animate (by image swapping) P/M's, with full support of 4 player/4 missile or 5 player option, player/missile width commands, single or double resolution (height) option, collision-detection support, and automatic or user-selected memory allocation.

The Character Editor is a joystick-driven program that allows composition on an 8 by 8 grid of character pixels with simultaneous display of the characters in graphics 8 mode. Character sets may be stored to and retrieved from disk by this editor and may be used as either character images or (parts of) player/missile images as desired.

The Sound Editor is also a joystick-driven program that allows fast, simple creation of any possible combination of single-setting sounds on the Atari 400/800. The programmer "flies" voices, represented by a graphics 2 colored numeral, over the display to determine pitch and distortion. Volume may be adjusted individually for each voice by the up/down arrow keys. The bits of AUDCTL (the register which enables all of the additional audio tricks like high-pass filtering and extended frequency range) can be toggled individually by the keys 0-7. A continuous readout of each parameter of each voice, and the bits of AUDCTL, is displayed in the text window at the bottom of the screen. This program is very entertaining by itself, and up to 4 "programmers" can create sounds at once, each with a joystick.

The entire package is very tight and convenient. The implementation of PM Graphics will almost certainly never be improved upon, and rarely equaled.

Over 35 pages of documentation. Requires valFORTH 1.1.

ValFORTH Software System for Atari 400/800

The valFORTH software system for Atari 400/800 consists of a bootable core package called valFORTH 1.1 and a number of additional packages that load on top of valFORTH 1.1. At this writing, the additional packages are:

Available from Stock:

Utilities/Editor

Player/Missile Graphics

Display Formatter

Turtle/val Graphics and Advanced Floating Point

Text Compression and Auto Text Formatting

valDOS (10/82)

Descriptions of these packages follow. Data on packages not yet released are preliminary.

How about guarantees?

Defective media is covered for 30 days from date of purchase. Replacement thereafter is subject to a nominal disk swap charge of \$12.00, plus postage and handling.

What do I need to operate valFORTH?

valFORTH operates on the Atari 400 or 800 plus one or more packages requires 32K minimum working space. All packages are on disk.

valFORTH alone requires 24K. valFORTH Memory requirements include 10-12K

What do I do if I have technical questions?

~~Call 1-800-528-7070 (Arizona, dial 790-7141) and tell the person who answers that you have a technical question about valFORTH.~~

Cost and Ordering Information:

There are currently seven packages available. These are described in the attached pages and are: valFORTH 1.1 (\$59.95), General Utilities and Video Editor (\$49.95), Player Missile Graphics (\$49.95), Display Formatter (\$39.95), Turtle and valGRAPHICS (\$54.95), Text Compression (\$39.95), and valDOS (\$59.95).

If you order three or more software packages at one time, a professional binder is included at no charge. As of December 1, 1982, Valpar is no longer offering a \$15.00 credit for proof of purchase of APX FORTH. Please note this change. Also as of December 1, 1982, we will no longer be offering the introductory full set price of \$203.00 for customers who order valFORTH 1.1 through Text Compression. The full price of \$294.70 will be charged. The book, *Starting Forth*, is an accessory that we sell for your convenience for \$15.95. It comes with our own "Notes on Starting Forth for the Fig-Forth User."

The costs listed above do not include shipping, handling, and insurance. We ship by United Parcel Service unless otherwise requested by our customers. Shipping charges generally run about \$4.00 for a full set (7 pounds). C.O.D. orders are an additional \$1.50 for UPS delivery.

To order you may call our toll free number, 1-800-528-7070 (Arizona, dial 790-7141). Payment can be made by MasterCard, VISA, money order, cashier's check, C.O.D., or by personal check (we must hold personal checks for ten days). We are sorry, but we do not accept American Express cards. You may also order by sending us your order, along with charge information, check, or money order.

As a note to your friends who may be interested in valFORTH, to get information and the bumper sticker advertised in Creative Computing, you must send us a self-addressed, stamped envelope of business size, and 25¢ in coin. Requests without these cannot be processed.

Thank you for your interest!

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COMPUTER PRODUCTS

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Information Sheet

Despite the explosion of interest in Forth, many programmers are not yet familiar with what it is and how it compares to other popular languages. What follows is a brief introduction to Forth in general and valFORTH in particular.

What is Forth?

It is a stack oriented, high level language in which the user adds to the basic kernel of commands by defining words (commands) of his/her own.

How fast is it and why?

Very fast. Forth typically executes ten to twenty times faster than other interpreted languages, primarily because of the very small size of the interpreter itself. Pascal or Basic interpreters are usually at least two thousand bytes long. The Forth interpreter is only about 30 bytes.

Is there more than one version of Forth available?

Yes, there are several. These include the original Fig Forth as well as versions available from Quality Software, Atari (Apex), Pink Noise Studios, and others for the Atari. There are still others available for Apple, TRS-80, and many other machines. One of the real advantages of Forth is that it can be effectively implemented (and is) on so many different kinds of computers.

What about Machine Code?

Forth offers the ability to mix high-level and machine code in an extremely simple manner. valFORTH provides one of the most flexible 6502 assemblers found anywhere.

What are the main advantages of Forth?

- It executes very fast
- It is fast to write, because the user can customize it for his/her own needs
- It allows total control of every function of your computer
- It is frugal with memory
- It uses structured code, and so can be modified or debugged module by module

What are the disadvantages?

The main one is that, because of its power, FORTH is somewhat more difficult for people to learn, then, say, Basic.

How does valFORTH use memory?

The basic valFORTH system occupies only about 9K of RAM, up to about address 10600 decimal, plus 2K of removable buffers. In addition, more than 30K (compiled) of very useful additional words are available for loading as desired. The memory requirements noted in the valFORTH advertisements are merely the suggested system sizes which allow about 10 to 14K remaining RAM for "normal" game program and video memory requirements. In Forth, this is a substantial amount of memory for applications purposes.

Does valFORTH use documented Atari operating system calls?

Yes, exclusively!

Can I back up my valFORTH diskettes?

Yes, all of the software packages are on copiable diskettes, one package per diskette. You can make back-up copies or create combinations of compiled utilities on a single bootable diskette as you desire. Both software and instructions for this are included.

What are my requirements if I use valFORTH to write software for sale?

We assume, because of the inherent power of our software, that it will be extensively used for commercial software development. We applaud and encourage such use and place only two requirements on it.

1. That the software or documentation contain a notice indicating that valFORTH/fig-Forth was used for developing the product(s). The wording for this notice is contained in documentation.
2. That the procedure included with valFORTH, or an equally secure procedure, be used to protect the valFORTH materials which are inherent in the product itself.

There are no licensing or royalty agreements required for such use, as long as the valFORTH materials themselves are not sold. Valpar will make every effort to support those using valFORTH for product development.

How about documentation?

Our staff has worked very hard to provide some of the best documentation available. The over 350 pages of materials provided with the full set are neatly printed and housed in an attractive binder for your convenience. Much tutorial material and many excellent examples are included for the novice, in addition to a wealth of more technical information, best suited to the needs of the professional programmer. If there is better documentation available anywhere we haven't been able to find it.

Updates available?

Yes. We will be continuously improving and expanding valFORTH for our in-house software development. It is our intention to make all significant changes and improvements available to our customers as they are available. There will be announcements of those improvements and update costs will be low, primarily covering disk swap costs, documentation and shipping and handling.

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valFORTH 1.1

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PRODUCT DESCRIPTION

This package is a stand-alone fig-FORTH system for the Atari 400/800. It is bootable and operates independently of Atari DOS. As with virtually all FORTH implementations, it provides its own operating system and disk access words.

All speed-critical stack, arithmetic, and system words have been recoded in machine language for high speed, which gives valFORTH 1.1 an immediately noticeable speed advantage over other Atari Forths.

The package includes:

two editors (the standard fig editor and a stripped-down version of the full valFORTH Editor available on the Utilities/Editor package);

an advanced 6502 macro assembler in FORTH, a decompiler for FORTH and a visible stack (signed or unsigned);

many important systems words like PICK, ROLL, (CMOVE, /LOOP, etc., have been added as used in the excellent beginners book, STARTING FORTH by Leo Brodie;

graphics and sound commands, all expanded from the BASIC set, and allowing, for instance, simplified text output to graphics 1 and 2 screens, and user selection of default background color when in graphics 0;

printer and/or video display output options, disk-copy routines, support of OS ROM calls for OPEN and CLOSE, download of RS-232 drivers;

simple saving of "work" systems for system rebooting instead of time-consuming recompilation;

an auto-boot utility for creating protected, distributable software, on disk or cassette, without any requirement for licensing fees by Valpar.

approximately 110 pages of documentation, including a get-acquainted section called "Strolling through valFORTH 1.1," source code listings for all words except the valFORTH 1.1 kernel itself, and handy reference cards on heavy stock.

valFORTH 1.1 is an exceptional value for hobbyist or professional.

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GENERAL UTILITIES AND VIDEO EDITOR

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3801 E. 34TH STREET
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PRODUCT DESCRIPTION

This package loads on top of valFORTH 1.1. It provides extensive development support for the serious programmer as well as additional Atari 400/800-specific routines which make possible many of the obscure "tricks" possible with the hardware. A source code listing is provided for the entire disk. The utilities include:

4 types of "case" statements for simple implementation of complex conditional branching situations;

4 types of arrays, allowing flexible data compilation and retrieval;

miscellaneous utilities including machine coded STICK and PADDLE read routines, extensive random number support (including "pick one in a range," and array "shuffling"), simple reading of the main system timer, block-and, block-or, block-xor, block screen move on a single disk or between disks, multiple-sector disk-to/from-memory read/write, bit manipulation words, etc.,

extensive support of double-numbers, as per STARTING FORTH;

a very complete string creation and manipulation package including keyboard input with various options, string-to-number and number-to-string conversions named after their BASIC counterparts, string operators (compare, move, concatenate, search, exchange, store, fetch, etc.), and string constants and variables;

"transient structures," which allow smaller final program size, as compilation-only words may be discarded with the transient area when no longer needed (a state-of-the-art feature); the implementation of text-on-hires displays (graphics 8, only);

The Editor in this package is one of the most powerful and convenient available in any FORTH system today, and eases programming fatigue significantly. Editor features include:

Replace-and insert mode with cursor indication of mode, and delete-and insert-line with "oops" command to recover unintentionally lost lines; erase-to-end-of-line, split-line, write chain arrow, remove chain arrow, up-cursor, down-cursor, right-cursor, left-cursor;

multiple-line buffer (up to 320 lines, user selectable and memory permitting) with 5 line visible window onto the buffer and buffer commands such as to-buffer, from-buffer, rotate buffer, copy-buffer, etc.

edit next screen, edit previous screen, reedit the last screen edited;

greatly enhanced versions of WHERE and LOCATE which pinpoint errors and definitions;

approximately 60 pages of documentation with handy reference cards on heavy stock. Requires valFORTH 1.1.

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TURTLE & valGRAPHICS
AND ADVANCED
FLOATING POINT ROUTINES

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PRODUCT DESCRIPTION

This graphics system is one of the most comprehensive graphics packages ever offered on a micro. At its heart is a COMPLETE replacement of the functions of the Atari OS graphics routines by new code embodying many major advances. The capabilities of this new system include, but are not limited to:

- * Line drawing routines several times faster than BASIC
- * Fill routines fill left AND/OR right
- * "Spine" line or fill may be different from fill/color
- * All draw and fill functions may operate as XOR instead of replace, allowing erase-by-redraw
- * Special option allows drawing to and through corners without artifacting
- * Fills AND draws may at user option proceed over areas already colored, or may stop optionally at a specific color or the absence of a specific color.
- * Complete support for the unsupported (in BASIC) graphics mode 7+ (also known as "7 and a half") which is Antic mode 14. This mode is called up like any other by the command 12 GR. and is used, for example, in the cartridge version of Missile Command from Atari.
- * Draw and fill commands now work in wide and narrow screen modes, as well as in the normal screen width.
- * A very extensive set of windowing functions has been provided to allow clipping and scaling, windows within windows within windows, and so on.
- * Turtle graphics has been expanded with several commands like turn-toward (TURNTWD) which allows pointing the turtle toward an arbitrary point, and 2-line-intersection ("2LNX") which allows "pencil and straight edge" type graphical construction.
- * Extensive window-, point- and line-naming words have been provided for simpler program conceptualization.

Besides the graphics package briefly described above, also provided are trigonometric function extensions to the core floating point set in valFORTH 1.1, along with various patches around Atari OS shortcomings in dealing with overflow and underflow of floating point computations. Also provided are integer versions of sine, cosine, and arctangent functions that allow the user to trade accuracy for speed in trigonometric computations.

Finally, this package is based on a new high-speed, low-memory consumption, state-of-the-art FORTH data structure called QUAN which was developed at Valpar to replace the VARIABLE construct and appears here for the first time.

Over 60 pages of documentation including 16 pages of examples.

Requires valFORTH 1.1

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Text Compression and Auto Text Formatting

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PRODUCT DESCRIPTION

The software in this package grew out of text handling needs at Valpar itself as well as out of discussions with various adventure-game authors about their own needs. This package can be very useful in any application that has to perform a significant amount of text output. In addition, the coding strategy was designed for almost immediate transfer to other fig-FORTH systems, even on other processors.

Two different approaches to "text compression" are used. The first method stores messages on disk, encrypting them first if this user option has been selected. Messages may be recalled from disk (decrypted as necessary) by executing message names which were defined at compile time. The second text compression method utilizes some advanced FORTH techniques to achieve in-memory coding of message material and is useful when a program must run without access to disk.

After either type of compressed text discussed above has been retrieved the text may be routed through the automatic formatting routines. These routines will format and output the text to video display, printer, or both, in accordance with various user-selected options. Autoformatting options include:

Left, right, center, and fill justification.

Variable-color output in colored modes

cap-next and cap-lock

Inverse video and/or inverse background.

Formatting for video display, either through TYPE or through a window formatter which allows different messages to be presented at different areas of the screen, with automatic scrolling as required.

Formatting for printer output.

This package is a must for virtually any extensively text-oriented or "talky" application on the Atari.

Requires valFORTH 1.1